

CLAIMS

What is claimed is:

1. A storage system, comprising:
 - a storage controller for managing transfers of data between a host and storage memory;
 - a data mover coupled to the storage controller, the data mover handles data transferred between the host and the storage memory; and
 - a buffer coupled to the data mover for storing data being transferred between the host and the storage memory;wherein, to conserve power, the storage controller modifies operation of the storage system based on status of the data transfer.
2. The storage system of claim 1 wherein the storage controller modifies operation of the storage system based on a capacity of the buffer.
3. The storage system of claim 1 wherein the storage controller modifies operation of the storage system by turning off a portion of the storage system.
4. The storage system of claim 1 wherein data is transferred between the data mover and host at a first transfer rate, and data is transferred between the data mover and storage memory at a second transfer rate, and wherein the storage controller modifies operation of the storage system by functioning to match the first and second transfer rates.
5. The storage system of claim 1 further comprising:
 - a storage memory interface coupled to the data mover, the storage memory interface handles data transferred to and from storage memory, the storage memory interface also including error correction logic.

6. The system of claim 5 wherein the storage controller modifies operation of the storage system by turning off the error correction logic of the storage memory interface in the storage system.
7. The system of claim 5 wherein the error correction logic of the storage memory interface comprises:
 - an encoder for encoding data to be stored in storage memory; and
 - a decoder for decoding data retrieved from storage memory;wherein the storage controller modifies operation of the storage system by turning off the decoder in the error correction logic of the storage memory interface.
8. The system of claim 7 wherein the storage controller turns off the decoder by disconnecting power to the decoder.
9. The system of claim 7 wherein the storage controller turns off the decoder by disconnecting a clock signal to the decoder.
10. A method comprising:
 - transferring data between a host and storage memory via a storage system; and
 - dynamically adjusting operation of the storage system to conserve power depending on a status of the data transfer.
11. The method of claim 10 wherein dynamically adjusting operation of the storage system to conserve power depending on the status of the data transfer comprises:
 - turning off a portion of the storage system based on the status of the data transfer.

12. The method of claim 11 wherein dynamically adjusting operation of the storage system to conserve power depending on the status of the data transfer comprises:

turning off error correction logic in the storage system based on the status of the data transfer.

13. The method of claim 11 further comprising:

turning on the portion of the storage system when a subsequent transfer of data is initiated by the storage system.

14. The method of claim 10 wherein transferring data between a host and storage memory via a storage system comprises:

storing the data to be transferred in a buffer; and
determining a remaining capacity of the buffer.

15. The method of claim 14 wherein dynamically adjusting operation of the storage system to conserve power depending on the status of the data transfer comprises:

turning off a portion of the storage system based on the determined remaining capacity of the buffer.

16. The method of claim 14 wherein dynamically adjusting operation of the storage system to conserve power depending on the status of the data transfer comprises:

adjusting the rate of transfer of data based on the determined remaining capacity of the buffer.

17. The method of claim 16 wherein the method is repeated until the remaining capacity of the buffer is generally stable about a predetermined capacity.

18. The method of claim 16 wherein the method is repeated until the data can be pipelined during the transfer.
19. The method of claim 16 wherein determining the remaining capacity of the buffer comprises:
- determining a first remaining capacity of the buffer at a first time;
 - determining a second remaining capacity of the buffer at a second time;
 - and
 - comparing the first remaining capacity and the second remaining capacity to determine whether the capacity is increasing or decreasing.
20. The method of claim 19 wherein dynamically adjusting the rate of transfer of data based on the determined remaining capacity of the buffer comprises:
- decreasing the transfer rate from storage memory when the remaining capacity of the buffer is decreasing; and
 - increasing the transfer rate from storage memory when the remaining capacity of the buffer is increasing.
21. A system for power management of a storage system, comprising:
- means for transferring data between storage memory and a host;
 - means for storing the transferred data for later retrieval; and
 - means for dynamically adjusting operation of the storage system such that the storage system draws less power.
22. The system of claim 21 further comprising means for modifying a rate of data transfer.
23. The system of claim 21 further comprising means for turning off a portion of the means for transferring data upon an occurrence of a predetermined event.
24. The system of claim 21 further comprising means for monitoring a status of the data transfer.